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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,395	09/14/2005	Cesar Castanon Fernandez	P/4043-216	1637
2352 7590 09/19/2007 OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			EXAMINER LUU, CUONG V	
			ART UNIT 2128	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/549,395

Applicant(s)

CASTANON FERNANDEZ, CESAR

Examiner

Cuong V. Luu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1-13 are pending. Claims 1-13 have been examined. Claims 1-13 have been rejected.

Response to Amendment

1. The amendment to the abstract filed 8/23/2007 has been considered and accepted.

Response to Arguments

2. Applicant's arguments filed 8/23/2007 regarding the objection to drawings have been fully considered but they are not persuasive. The Applicant argues that since reference signs in the claims were removed the objection to drawings is overcome. The Examiner respectfully disagrees. In previous action, the Examiner objected to drawings because "they do not include the following all reference signs mentioned in the description and claims". Reference signs were only removed in claims but not the description, so the objection still has not completely been overcome.
3. Applicant's arguments filed 8/23/2007 regarding the U.S.C. 112, 2nd paragraph rejections of claims 1-13 have been fully considered and are persuasive. The U.S.C. 112, 2nd paragraph rejections of claims 1-13 have been withdrawn.
4. Applicant's arguments, see pp. 8-10, filed 8/23/2007, with respect to the rejection of claim 1 under U.S.C. 102(e) have been fully considered but they are not persuasive.
 - The Applicant argues that Grace does not teach "defining a first surface in a spatial center of the three-dimensional body by triangulation, so that said first surface extends along two main directions of said three-dimensional body." Grace teaches generating

bounding surface based on control points (p. 3 paragraph 14), which form grids of depth values and which are points of observation on a variable of interest location, depth or elevation range (p. 5 paragraph 0043) as a network of patches of triangular panels (p. 3 paragraph 0013). The teachings of creating bounding surface as a network of patches of triangular panels and control points forming grids (meaning control points are vertices of grids formed by themselves) of depth values are interpreted defining a first surface in a spatial center of the three-dimensional body by triangulation as the Applicant states in paragraphs 0041-0043 of the description as following:

[0041] Data n the (x, y, z) coordinates that define the position of each bore (s1, s2, etc.) in the three-dimensional body (intersection of the bores and the three-dimensional body), where the coordinates can either define a single point that determines the centre of the body or an interval determining the beginning and the end of the three-dimensional body.

[0042] Data on the properties of the three-dimensional body such as the data on the actual width of the three-dimensional body (real power), analysis data, geotechnical data, geological data, etc. (data 1, data 2, etc.) for each bore (s1, s2, etc.).

[0043] Then the stage b) is performed, in which the surface (T1) is generated in the spatial centre of the three-dimensional body by applying the triangulation method to the database BDS (see FIG. 4), specifically using:

- The Applicant argues that Grace does not teach claim 1 step (c) of "defining on [the] first surface a cluster of points generated with regular spacings in said two main directions of the three-dimensional body" because regularly spaced polylines for generating a wire frame model taught by Grace is patentably distinct from applicant's claimed step of "defining a cluster of points" in a "first surface" that is defined in a "spatial center of the three-dimensional body by triangulation." As discussed above Grace does teach "defining a

cluster of points" in a "first surface" that is defined in a "spatial center of the three-dimensional body by triangulation", the Examiner submits that Grace does teach claim 1 step (c) (pp. 6-7, paragraphs 0056-0057).

- The Applicant argues that Grace does not teach or suggest applicant's claimed step (d) of "generating, by creating linked triangles between the points of [the] cluster of points, a second surface constituted by said triangles." The Examiner respectfully disagrees. Grace does teach this limitation in pp. 6-7 paragraphs 0056-0057.

- Moreover, The Applicant argues Grace does not teach or suggest applicant's claimed step (e) that defines "calculating, by an interpolation method and based on [the] first data in the first database, second data defining calculated physico-chemical properties of the three-dimensional body at said points of said cluster of points." In particular, Grace does not teach or suggest applicant's claim 1 cluster of points, and, therefore, Grace cannot teach "calculating ... second data defining ... physico- chemical properties of the three-dimensional body at said points of said cluster of points. Grace teaches calculating, by an interpolation method and based on [the] first data in the first database, second data defining calculated physico-chemical properties of the three-dimensional body at said points of said cluster of points (p. 4 paragraph 0043). Since Grace does teach applicant's claim 1 cluster of points as discussed in the bullet immediately above, Grace clearly teaches step (e) as recited in the claimed invention.

Claim 1 as discussed above remains rejected.

5. The applicant argues that claims 2-6, and 8-13 are allowable since they depend on claim 1. Since claim 1 remains rejected, claims 2-6, and 8-13 remain rejected.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 4-6, and 8-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Grace (U.S. Pub. 2003/0112235 A1).

1. As per claim 1, Grace teaches method for determining physico-chemical properties of a three-dimensional body, said method comprising the following steps:
 - a) generating a first database that contains first data on bores intersecting said three-dimensional body, said first data defining the location and physico-chemical properties of the three-dimensional body at said bores (p. 2 paragraph 0010, p. 4 paragraph 0043, and p. 8, paragraph 0075)
 - b) defining a first surface in the spatial centre of the three-dimensional body by triangulation, so that said first surface extends along two main directions of said three-dimensional body (p. 5 paragraph 0043, p. 3 paragraph 0013),

c) defining on said first surface a cluster of points generated with regular spacings in said two main directions of the three-dimensional body (pp. 6-7, paragraphs 0056-0057),

d) generating, by creating linked triangles between the points of said cluster of points, a second surface constituted by said triangles (pp. 6-7, paragraphs 0056-0057),

e) calculating, by an interpolation method and based on said first data in the first database, second data defining calculated physico-chemical properties of the three-dimensional body at said points of said cluster of points (p. 4 paragraph 0043),

f) generating a second database using the triangles constituting said second surface, so that said second database contains, for each triangle constituting said second surface, the coordinates of the vertices of the triangle, the second data defining calculated physico-chemical properties of the three-dimensional body at said vertices of the triangle, and the area of the triangle in space (p. 6, paragraph 0056, p. 7, paragraph 0066, and p. 4 paragraph 0043),

g) generating reports with information from the second database (p. 7 paragraph 0063),
and

h) generating three-dimensional graphical representations based on the second database (p. 12 paragraph 0114).

2. As per claim 2, Grace teaches the first database comprises the following data: data on coordinates defining the position of the intersection of each bore with the three-dimensional body, wherein the coordinates can either define a single point determining the centre of the body at said bore or an interval determining the beginning and the end of the three-dimensional body at said bore (p. 8 paragraph 0075), and the data on physico-chemical properties of the three-dimensional body for each bore (p. 8 paragraph 0077).

3. As per claim 4, Grace teaches the cluster of points is generated by an algorithm based on regular spacings on the surface (p. 7 paragraph 0066).
4. As per claim 5, Grace teaches in step d), a triangulation algorithm based on the cluster of points is used to generate the second surface (p. 6 paragraph 0056).
5. As per claim 6, Grace teaches in step e), the second data for each point of said cluster of points are calculated based on the first data corresponding to surrounding bores (p. 4 paragraph 0043).
6. As per claim 8, Grace teaches calculating said second data, for any point of said cluster of points, said second data for said point are set to be the arithmetical mean of corresponding first data corresponding to bores within a maximum distance, weighted by a power of the inverse of the distance between said point and the respective bore (p. 4 paragraph 0043).
The inverse distance weighting method for interpolation mentioned in this paragraph is the method recited in this limitation as evidence by p. 761, col. 2 of the page, paragraph 5 in the col., in article Using Prediction Based on Geostatistics to Monitor Trends in *Aspergillus flavus* Strain Composition by Orum et al, The American Phytopathological Society, 1999, Pub. No. p-199900719-03R, Vol. 89 No. 9, 1999, pp. 761-769).
7. As per claim 9, Grace teaches calculating said second data, for any point of said cluster of points, a geostatistical method, such as Kriging, is used (p. 4 paragraph 0043).

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8. As per claim 10, Grace teaches the graphical representation generated in stage h) from the second database is performed by graphical software that allows the three-dimensional representation of the shape and properties of the three-dimensional body (p. 12 paragraph 0114).

9. As per claim 11, Grace teaches method according to claim 1, said method being a method for determining the mineral resources or reserves of a mineral body or layer, wherein the first database is made to contain data on the intersections of the bores with said mineral body or layer (p. 8 paragraph 0075), this database comprising:

data of coordinates defining the intersection of each bore with the mineral body or layer, wherein the coordinates can either define a single point determining the centre of the body at said bore, or an interval determining the beginning and the end of the three-dimensional body at said bore (this limitation has already been discussed in claim 2; therefore, it is rejected for the same reasons), and

data on the physico-chemical properties of the mineral body or layer (data 1, data 2) at each bore (this limitation has already been discussed in claim 2; therefore, it is rejected for the same reasons).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Grace as applied to claims 1.

10. As per claim 3, Grace teaches the first surface is generated by applying the triangulation method based on the coordinates of the bores (p. 6 paragraph 0056 and p. 8, paragraph 0075), and, optionally, further based on three-dimensional interpretation of known data of this body and previous knowledge of a usual shape of the corresponding type of body (p. 4-5 paragraph 0044) but does not teach using the coordinates of the centers of the bores.

It would have been obvious to one of ordinary skill in the art to use the coordinates of the centers of the bores in generating the first surface by applying the triangulation method. It would have made the selection of the control points in performing the triangulation method consistent.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grace as applied to claims 1 and 11 above, and further in view of the applicants' admitted prior art, herein after the AAPA.

11. As per claim 7, Grace does not teach calculating said second data for any point of said cluster of points, an interpolation method is used by which the second data for said point are set to be equal to the corresponding first data corresponding to the nearest bore.

However, the AAPA teaches this limitation (paragraph 0013).

It would have been obvious to one of ordinary skill in the art to combine the teachings of Grace and the AAPA. The AAPA's teachings would have made the method easy to use and computerize (p. 2 lines 5-10).

12. As per claim 12, Grace teaches a set of points and lines are defined located on a central surface of the mineral body or layer, and using these points and lines, so as to form a surface by triangulation, providing a set of linked triangles in the space, whereby sufficient points and lines are added so that the surface generated by triangulation is a faithful representation of the centre of the mineral layer or body and covers the entire area to be studied (this limitation has already been discussed in claim 1) but does not teach in step b), defining the first surface is made by forming linked triangles between the median points of the intersection of each bore with the mineral body or layer, by using the centres of the intersections of the bores with the mineral layer, the information on any outcrops of the layer and geological interpretation regarding the spatial location of the layer.

The AAPA teaches this limitation (p. 2 lines 5-10).

It would have been obvious to one of ordinary skill in the art to combine the teachings of Grace and the AAPA. The AAPA's teachings would have made the method easy to use and computerize (p. 2 lines 5-10).

13. As per claim 13, Grace does not teach the cluster of points is generated applying the following steps:

an algorithm is used to fill in the first surface with points that are more or less equidistant to one another,

the distance between the points is defined according to a calculation detail required so that its final three-dimensional representation agrees with an initial interpretation of the layer,

whereby, depending on the algorithm used, the real distance between the points is not necessarily always the same.

The AAPA teaches these limitations (p. 2 lines 5-10).

It would have been obvious to one of ordinary skill in the art to combine the teachings of Grace and the AAPA. The AAPA's teachings would have made the method easy to use and computerize (p. 2 lines 5-10).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cuong V. Luu whose telephone number is 571-272-8572. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah, can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. An inquiry of a

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general nature or relating to the status of this application should be directed to the TC2100

Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CVL


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